

ENERGY EFFICIENT COMPACT OIL AND WATER SEPARATOR

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings there is disclosed an energy efficient compact oil and water separator wherein water will be extracted from oil and oil extracted from water, employing a unique array of novel structures that cause the extraction of the water and oil to be more complete and efficient than with prior inventions.

A mixture of oil and water enter the containment vessel 1 through the inlet conduit 2 impacting a deflector means 2a to impede the momentum of the entering mixture. Oil will migrate to an upper region 1a of the containment vessel and the water will migrate to a lower region 1b. The objective is to have water free oil exit the oil outlet conduit 3 and oil free water exit the water outlet conduit 4 with the minimum expenditure of time and energy.

To accomplish this objective it is often necessary to heat the oil to lower the viscosity. With my invention this is accomplished utilizing a U shaped firetube 5 that has a burner 5c on one end and an exhaust stack 5b on the other end and includes a novel multitube heat exchanger section 5a on the exhaust side of the U tube to increase the surface area of the firetube and thus improve the heat exchange efficiency while decreasing the physical size of the firetube and the burner. After the oil viscosity reduction it is common to pass the oil through an electric field to coalesce the entrained water drops for faster gravity separation. With my invention this is more efficiently accomplished by causing the oil to flow downward through the electric field 15 rather than horizontally or upward as with prior inventions. The downward flow will purge the coalesced water drops from the electric field preventing the concentration of water in the electric field from becoming high enough to cause electrical short circuiting.